

A Checklist of Seed Plants at Gunung Aais Forest Reserve, Pahang, Peninsular Malaysia

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Abstract: The expedition recorded at least 584 taxa of seed plants from 280 genera and 91 families. Of the recorded taxa, 479 were dicots, while 102 and 3 were monocots and gymnosperms, respectively. The two most diverse families were Euphorbiaceae and Palmae, while the most speciose genera were *Syzygium* (Myrtaceae, 17 taxa) and *Shorea* (Dipterocarpaceae, 14 taxa). As high as 10.9% (64 taxa) of the Gunung Aais flora is endemic to Peninsular Malaysia. The genera with the highest number of endemic taxa were *Calamus* (Palmae, 3) and *Henckelia* (Gesneriaceae, 3). Some botanical highlights of the expedition area are the *Habenaria paradiseoides* (Orchidaceae), *Scaphochlamys laxa* (Zingiberaceae), *Ceratolobus kingianus* (Palmae), *Eugeissona brachystachys* (Palmae), *Anisophyllea reticulata* (Anisophylleaceae), *Begonia rajah* (Begoniaceae) and *Henckelia pyroliflora* (Gesneriaceae).

Keywords: Gunung Aais Forest Reserve, Peninsular Malaysia, vascular plants, endemism, checklist

INTRODUCTION

The Gunung Aais Forest Reserve lies in the Jerantut District in the state of Pahang. Named after Gunung Aais, a summit located between Sungai Tembeling and Sungai Lurut (4° 26' 02.3" N, 102° 50' 3.2" E), the reserve comprises approximately 79,793 ha of primary rain forest (Saleh 2005) and it adjoins Taman Negara in the north and west, Tekai and Berkelah Forest Reserves in the south and Jengai and Cerul Forest Reserves (Terengganu) in the east. About 1,268.70 ha of the Reserve have been gazetted under the functional class of soil protection forest (Government Gazette 259, 14 March 2002).

The banks of the Sungai Tembeling near Gunung Aais Forest Reserve are believed to have been occupied by man since early 1800s' and historical records show that during the Japanese occupation, the locals used the area as a hideout and access route to Terengganu (Saleh 2005). Now, at least forty villages occupy the banks that border the western part of the reserve (Saleh 2005). Local communities, predominantly Malays, venture into the reserve primarily to fish, collect honey from *Koompassia excelsa* (tualang) trees and previously, rattans. Other livelihood activities involve ecotourism and building of wooden boats. Ecotourism activities

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were initiated some years back at Jeram Perahu but they have since slackened.

In the expedition area, there was no significant change to the forest structure and species composition that can be linked to recent large-scale harvesting activities although, there is sporadic, small-scale harvesting of non-timber forest products such as rattans and medicinal plants. There were also no signs of abandoned farmland as a result of shifting cultivation. Dense tracts of primary forest were apparent even from the banks of smaller tributaries. This is perhaps not surprising since part of the reserve has been gazetted as soil protection forest. The lower reaches of the Sungai Tembeling well beyond the last village were, however, significantly disturbed – this was evident from the presence of several bamboo species associated with forest fringes (Abd. Razak 2005) occupying long stretches along the riverbank. At the time of travel, the lower reaches of the river were also sedimented; several small clearings and log deposits were noticed during the river journey.

The expedition area was accessed from Forest Research Institute Malaysia's (FRIM) Jengka Field Station to Kampung Mat Daling by logging roads penetrating the Tekam and Tekai Forest Reserves. From Mat Daling, boats ferried the expedition team to Jeram Perahu, where the base camp was situated.

Gunung Aais Forest Reserve is poorly botanised and has few herbarium collections. There is hardly any literature available on the plant diversity of the area—the nearest site, which has a fair number of collections and a published description is the Gunung Mandi Angin, a summit which borders Gunung Aais FR and Taman Negara (Cockburn 1969). This expedition was thus aimed at documenting the biological diversity and other features of the area. This report provides a vegetation description and a checklist of seed plants occurring in the area.

MATERIALS AND METHODS

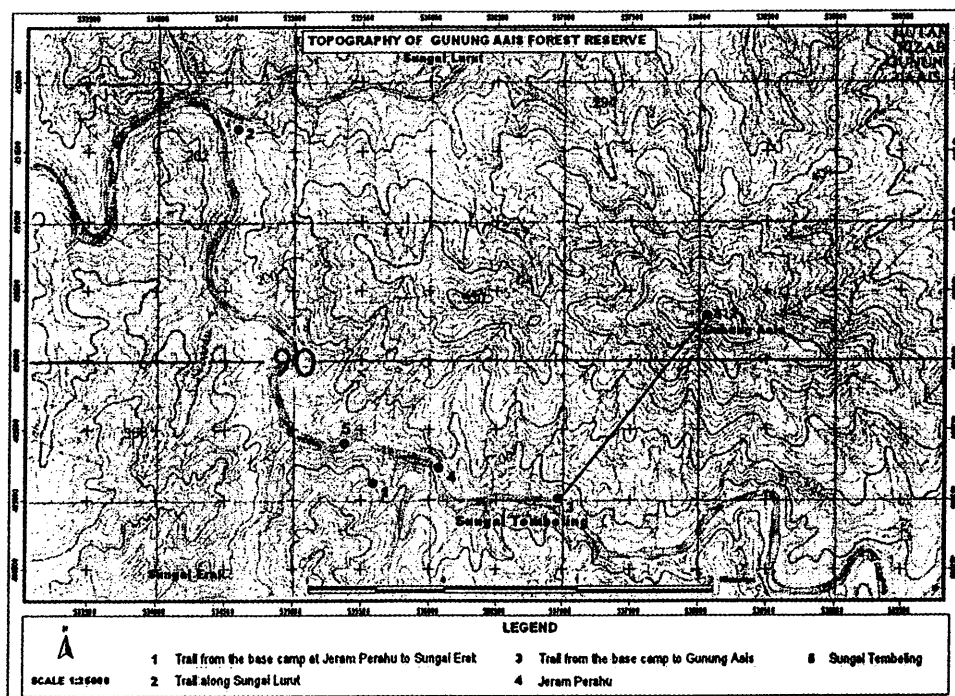
The expedition to the Gunung Aais Forest Reserve was conducted from 3 July to 10 July 2004. Botanical collecting in the area took place from 5 July to 8 July 2004. The base camp was situated at Jeram Perahu, the confluence between Sungai Tembeling and Sungai Jeram Perahu. From here, four localities were botanised—Sungai Erak, Sungai Lurut, the foothills to the summit of Gunung Aais, accessed from Sungai Tembeling, and along Sungai Jeram Perahu and Sungai Tembeling (Table 1 and Map 1). The riparian vegetation along Sungai Tembeling was also studied. The expedition area has no permanent villages and inhabitants and is covered by primary rain forest. The area covered in the expedition was approximately 1,600 ha, ranging from 156 m to 812 m above sea level (asl).

The expedition area lies within the headwaters of Sungai Tembeling and is drained by Sungai Tembeling, Sungai Erak, Sungai Lurut and Sungai Jeram Perahu. Hydrological results obtained during the expedition showed that all the rivers in the area are of Class 1, the Department of Environment's Water Quality Index Classes standard for water supply and fisheries (Saiful *et al.* 2005). Water in Class 1 does not require additional treatment for drinking purposes and rivers with such

Table 1: Details of collecting sites in Gunung Aais FR

Site	GPS location	Principal forest type	Location on map
Trail from the base camp at Jeram Perahu to Sungai Erak	N 4°25'23.6", E 102°48'52.6"; 200 m asl	Lowland dipterocarp forest with pockets of riverine vegetation	1
Trail along Sungai Lurut	N 4°26'52.6", E 102°48'20.1", 167 m asl	Riverine vegetation in lowland dipterocarp forest	2
Trail from the base camp to Gunung Aais	N 4°25'20", E 102°49'37.9" 156 m asl (foothills); N 4°26' 2.3", E 102°50'3.2"; 812 m asl (summit)	Hill dipterocarp forest with <i>seraya</i> -dominated subtype	3
Jeram Perahu	N 4°25'27.3", E 102°49'8.4"; 164 m asl	Riverine vegetation	4
Sungai Tembeling	N 4°25'57.6", E 101°35'7"; 164 m asl	Riverine vegetation	5

Map 1: Location of collecting sites in Gunung Aais Forest Reserve.



water are colonised by fish that are highly sensitive to environmental changes. Gunung Aais is geologically made up of an igneous body of coarse-grained porphyritic granitic rock (elevation below 580 m asl) with its peak dominated by a fine-grained, more resistant form of micro-granite with mafic minerals (elevation above 580 m asl) (Adzmi and Suhaimi 2005). This gives rise to two very distinct soils—a moderate to deep coarse to gravelly clay of the Beserah series in the lower part of the hill and shallow loamy sand in the upper part. The soil in the upper part of the hill is shallow and comprises a 30-50 cm thick layer of semi-decomposed material and litter underlined by a 10-15 cm thick layer of loamy sand sitting above microgranite bedrock.

Principal forest types occurring in the area are lowland dipterocarp forest, hill dipterocarp forest and submontane forest. The hill dipterocarp forest at Gunung Aais is dominated by *Shorea curtisii* (Dipterocarpaceae, *seraya*). The habitat types present in the area are hill slopes, ridges, valley bottoms, freshwater swamps and riparian strips.

The annual precipitation for 2002 and 2003, recorded at the nearest weather station at Temerloh, were 1438.9 mm and 1887.5 mm respectively (Anonymous 2002–2003). For the same period, mean daily air temperatures were, respectively, 27°C and 26.8°C, mean daily relative humidity 83% and 84% while the mean daily global radiation was 16.75 MJm⁻² and 16.11 MJm⁻² (Anonymous 2002–2003).

The survey was a general one, with no transect set up. Standard collecting materials and methods and note-taking were used (Bridson & Forman 1992). Herbarium specimens were collected for plants with fertile parts while vouchers were collected for plants that were not flowering or fruiting. Floristic notes and habitat types were also recorded. All voucher and herbarium collections were lodged at the Herbarium of the Forest Research Institute Malaysia (KEP) with duplicates of herbarium material distributed to partner herbaria in the region, Europe and United States of America. Identification work was carried out primarily at KEP.

The checklist includes vouchered, herbarium and sighted records (these are taxa that were sighted but not collected and which do not have a voucher specimen). It also contains taxa collected from the Gunung Aais Forest Reserve prior to this expedition—these were mainly compiled from the KEP collections. Sterile materials known only at the family level have not been included in the checklist (these are mainly large woody climbers from families like Annonaceae and Leguminosae) whereas taxa known only to the genus level, e.g., *Syzygium*, *Calophyllum* and *Diospyros* are included. Taxa that are rare or endemic to Peninsular Malaysia are highlighted. Where possible, the conservation status for a taxon is provided (Oldfield *et al.* 1998).

The checklist of seed plant taxa in Gunung Aais Forest Reserve is arranged alphabetically and grouped into gymnosperms, dicotyledons and monocotyledons. The entry format is as follows: family name; accepted name with authors in abbreviation; reference collection for specimens collected or specimens previously deposited in KEP; distribution in the expedition area; a record of whether the taxon is endemic to Peninsular Malaysia; and conservation status (where available).

RESULTS AND DISCUSSION

The Vegetation

Lowland dipterocarp forest

With the exception of Gunung Aais, large parts of the area botanised were undulating and covered with lowland dipterocarp forest with riparian vegetation present along rivers and tributaries. The emergent trees reached c. 40 m tall in some parts of the forest but trees above 1 m diameter at breast height (dbh) were infrequent. Species dominating this layer were *Swintonia floribunda* (Anacardiaceae), *Santiria laevigata* (Burseraceae), *Dipterocarpus costulatus*, *Shorea macroptera*, *S. parvifolia* ssp. *parvifolia*, *S. pauciflora* (Dipterocarpaceae), *Koompassia malaccensis* (Leguminosae) and *Palaquium hexandrum* (Sapotaceae).

The main canopy, to c. 30 m tall, was rather discontinuous. Small gaps were common although very large ones were rarely noticed along the trails. *Pimelodendron griffithianum* (Euphorbiaceae), *Dialium platysepalum* (Leguminosae), *Pouteria malaccensis* (Sapotaceae), *Heritiera simplicifolia* and *Scaphium macropodum* (Sterculiaceae) were commonly encountered in this stratum.

Below the main canopy were *Bouea oppositifolia*, *Melanochyla angustifolia* (Anacardiaceae), *Santiria tomentosa* (Burseraceae), *Aporosa falcifera* (Euphorbiaceae), *Hydnocarpus kunstleri* var. *kunstleri* (Flacourtiaceae), *Artocarpus lanceifolius* (Moraceae), *Teijsmanniodendron coriaceum* (Verbenaceae) and *Oncosperma horridum* (Palmae; bayas). Woody climbers such as *Diploclisia kunstleri* (Menispermaceae) and several species from the family Annonaceae and genus *Bauhinia* (Leguminosae) were frequently encountered (these have been omitted from the checklist for reasons mentioned in the materials and methods section).

Trees common in the understorey were *Polyalthia sumatrana* (Annonaceae), *Diospyros buxifolia*, *Diospyros venosa* var. *venosa* (Ebenaceae), *Blumeodendron kurzii*, *Drypetes pendula*, *Neoscortechinia kingii*, *Paracroton pendulus* (Euphorbiaceae), *Ryparosa fasciculata* (Flacourtiaceae), *Mesua ferrea* (Guttiferae), *Cynometra ramiflora* (Leguminosae), *Knema furfuracea* (Myristicaceae) and *Gironniera parvifolia* (Ulmaceae). *Musa violascens* (Musaceae) also occurred here. One individual each of *Calamus ornatus* and *C. manan* (Palmae), having a height of less than 10 m, were encountered; although reported here as medium-sized climbing rattans, these species are in fact impressive high climbers elsewhere often reaching lengths of over 50 m. Other climbing rattans such as *Calamus oxleyanus*, *Daemonorops verticillaris* (rotan sabong) and *D. geniculata* were infrequent. The non-climbing ones, e.g., *Calamus castanea* (*cucor*) were present but were nowhere abundant. Palms such as *Licuala glabra* var. *selangorensis*, *L. malajana* var. *malajana* and *Iguanura wallichiana* var. *wallichiana* were abundant in the expedition area with many individuals encountered along all trails. Apart from these, other rattans and palms that were encountered in all trails were *Daemonorops micracantha*, *Korthalsia echinometra*, *Pinanga disticha* and *P. malaiana*. Juveniles of bayas were common. *Eugeissona tristis* (Palmae, *bertam*) was rare, encountered

only along the trail to Sungai Erak. Forest along the ridges of Jeram Perahu had a low diversity and abundance of rattans and woody climbers. At least along the trails covered, slender, moderately climbing rattans were more common than massive, climbing ones.

The ground flora consisted of a mixture of *Thottea grandiflora* (Aristolochiaceae), *Peliosanthes teta* (Convallariaceae), *Mapania caudata* (Cyperaceae), *Henckelia floribunda* (Gesneriaceae), *Hanguana malayana* (Hanguanaceae), *Molineria latifolia* var. *megacarpa* (Hypoxidaceae), *Orchidantha fimbriata* (Lowiaceae), *Labisia pumila* (Myrsinaceae), *Tacca integrifolia* (Taccaceae), *Elettariopsis* spp. and *Globba cernua* (Zingiberaceae). Tree, rattan and palm saplings were abundantly scattered. In forest gaps, *Chroesthes longifolia*, *Staurogyne longifolia* (Acanthaceae) and *Amischotolype* spp. (Commelinaceae) were encountered.

Further beyond the ridges, a small swamp was encountered and the dominant species there were *Syzygium* spp. (Myrtaceae), *Pandanus* spp. (Pandanaceae), *Homalomena* sp. (Araceae), *Scleria sumatrensis* (Cyperaceae) and *Etilingera fulgens* (Zingiberaceae).

Along larger rivers upstream, *Tristaniopsis whiteana* and *T. merguensis* (Myrtaceae) dominated the vegetation interspersed with *Pentaspadon motleyi* (Anacardiaceae), *Lophopetalum subobovatum* (Celastraceae), *Dipterocarpus oblongifolius* (Dipterocarpaceae) and *Irvingia malayana* (Irvingiaceae). These larger trees were mixed with *Anisophyllea reticulata* (Anisophylleaceae), *Lophopetalum javanicum*, *Endospermum diadenum* (Euphorbiaceae), *Barringtonia macrostachya* (Lecythidaceae), *Artocarpus rigidus*, *A. dadah* (Moraceae) and *Pometia pinnata* (Sapindaceae). The steep and wet riverbanks were inhabited by shrubs such as *Antidesma salicinum*, *Croton laevifolius* (Euphorbiaceae), *Sauvagesia serrata* (Ochnaceae), *Ixora javanica*, *Gaertnera oblanceolata* var. *diversifolia* (Rubiaceae), aroids, e.g., *Homalomena* sp., and ferns such as *Cheilanthes tenuifolia* (Adiantaceae), *Dicranopteris* spp. (Gleicheniaceae) and *Osmunda vachellii* (Osmundaceae) (Theseira 2005). Along more open riverbanks, *Costus globosus* var. *kingii* (Costaceae), *Hypolytrum nemorum* var. *proliferum*, *Cyperus iria*, *Scleria sumatrensis* (Cyperaceae), *Donax grandis* (Marantaceae), *Musa violascens*, *Alpinia mutica* and *Zingiber spectabile* (Zingiberaceae) were encountered above the flood zone, while *Xenostegia tridentata* (Convolvulaceae), *Clidemia hirta* and *Melastoma malabathricum* (Melastomataceae) occupied sandy, exposed parts of the riverbanks. Forests along smaller streams such as Sungai Erak had fewer emergent trees and the main canopy reached to c. 20 m, having few large gaps. The understory layer was filled with *Goniothalamus tortilipetalus*, *Polyalthia cauliflora* (Annonaceae), juveniles of *Dacryodes rostrata* (Burseraceae), *Diospyros buxifolia* (Ebenaceae), *Agrostistachys gaudichaudii*, *Aporosa aurea*, *Baccaurea racemosa* (Euphorbiaceae), *Garcinia urophylla* (Guttiferae), *Ficus grossularioides* var. *grossularioides*, *F. schwarzii* (Moraceae), *Knema stenophylla* (Myristicaceae) and *Rinorea sclerocarpa* (Violaceae) while the ground was covered with abundant herbs. Some of the herbaceous flora encountered on steep earth banks of streams were

Homalomena sp., *Piptospatha* spp. (Araceae), *Begonia* spp. (Begoniaceae), *Cyrtandra* spp. (Gesneriaceae) and *Scaphochlamys* spp. (Zingiberaceae). Above the banks on undulating land were *Piptospatha* spp. (Araceae), *Cyrtandra* spp. (Gesneriaceae), *Stachyphrynium griffithii* (Marantaceae), *Phyllagathis rotundifolia* (Melastomataceae), *Pentaphragma ellipticum* (Pentaphragmataceae) and *Argostemma longifolium* (Rubiaceae), favouring dense shade while, *Orchidantha fimbriata*, *Tacca integrifolia*, *Elettariopsis triloba*, *Etlingera fulgens*, *Globba cernua* and *Hornstedtia leonurus* (Zingiberaceae) favoured semi-shaded, more undulating areas. *Henckelia* sp. (Sam FRI 49093) occupied niches between rocks overhanging Sungai Erak.

The vegetation along the downstream parts of large rivers such as Sungai Tembeling and Sungai Lurut was disturbed and open. The main canopy was almost non-existent and the understorey was filled with abundant woody and slender climbers, including rattans, and their juveniles. Large clumps of *Bambusa vulgaris*, *Gigantochloa scortechinii*, *Schizostachyum latifolium* (Gramineae) (Abd. Razak 2005) and *Alpinia mutica* (Zingiberaceae), together with *Costus speciosus*, *Donax grandis* and *Zingiber spectabile* were prominent along these riverbanks. Further inland, the main canopy became better defined but large emergents were still absent. Large-diametered high climbing rattans were infrequently encountered compared to the slender ones; along Sungai Lurut, only *Calamus densiflorus* and its juveniles were common while *Calamus manan* was encountered only once, possibly as a result of over-harvesting.

Hill dipterocarp forest

The hill dipterocarp forest on Gunung Aais was dominated by *Shorea curtisii* (*seraya*). *Seraya* was gregarious along the ridges and slopes leading to the first lookout point (N 04°26' 01.6", E 102° 49' 54.9", c. 615 m asl) and there were many large individuals having dbh values greater than 1 m. Other co-dominants included *Gluta wallichii* (Anacardiaceae), *Santiria laevigata* (Burseraceae), *Shorea balanocarpoides* and *Heritiera simplicifolia* (Sterculiaceae). In the understorey, *Palaquium oxleyanum* (Sapotaceae), *Anisophyllea reticulata* (Anisophylleaceae) and *Chondrostylis kunstleri* (Euphorbiaceae) were common. More details of the ecology of the area may be obtained from Abd. Rahman *et al.* (2005). *Calamus castaneus* was common in the foothills as a clustering non-climbing rattan. A small population of *Johannesteijsmannia altifrons* (Palmae) comprising more than 20 plants was noted from 650 to 700 m asl and a non-fertile individual of a *Cycas* sp. (Cycadaceae) was sighted at around 430 m asl, in steep, dense-canopied forest on hillslopes. At around 575 m asl, still in the *seraya*-dominated ridge forest, a small population of *Eugeissona brachystachys* appeared on steep exposed slopes. Many individuals were flowering and fruiting during that period. *Pandanus monothecha* (Pandanaeae) appeared on the ridge slopes at 690 m asl while *Henckelia pyroliflora* (Gesneriaceae), *Phyllagathis hispida*, *Sonerila picta* (Melastomataceae) and *Sauvagesia serrata* (Ochnaceae) were encountered above 530 m asl on steep, slightly

exposed slopes and these were common along the trail up to the summit. On the lower slopes, the ground flora comprised *Thottea grandiflora*, *Mapania caudata* (Cyperaceae), *Henckelia floribunda*, *Orchidantha fimbriata*, *Globba cernua*, *Labisia pumila*, *Argostemma longifolium*, *Tacca integrifolia* and *Elettariopsis triloba*. Also encountered in the foothills were *Staurogyne cf. malaccensis* (Acanthaceae), *Peliosanthes teta* (Convallariaceae), *Acranthera pulchella* (Rubiaceae), *Alpinia scabra*, *Etingera maingayi* and *E. metriocheilos*. *Acranthera pulchella* is a restricted endemic currently known only from the states of Pahang and Perak.

At around 615 m asl, *Shorea curtisii* was still dominant but the trees had become much smaller in size. New co-dominants appeared—in the upper strata, *Syzygium* spp., *Dacrydium elatum* and *Podocarpus neriifolius* (Podocarpaceae) and the lower stratum shrub *Vaccinium viscifolium* (Ericaceae) and fern *Dipteris conjugata* (Dipteridaceae). *Nepenthes gracilis* (Nepenthaceae) was scattered and *Hornstedtia scyphifera* was encountered on the ridge at an elevation of 745 m asl. Like *Eugeissona brachystachys*, many individuals were flowering and fruiting. Epiphytic Hymenophyllaceae were common on the tree trunks. At the summit (N 04° 26' 02.3", E 102° 50' 13.2", c. 825 m asl), *Dipteris conjugata*, *Gleichenia longisperma* and *Dicranopteris* spp. (Gleicheniaceae) completely dominated the ground flora; in some places near the summit, *D. conjugata* grew to more than 1 m tall. *Alpinia rafflesiana* (Zingiberaceae) and *Henckelia* sp. (Sam FRI 49103), a species that was recorded from Sungai Erak, were also encountered on the slopes at the summit. In shaded areas, Sphagnum moss blanketed the forest floor, interspersed with *Henckelia pyroliflora*, *Phyllagathis hispida*, *Sonerila picta* and *Nephelaphyllum pulchrum* (Orchidaceae). Trees around the summit elevation were about 8 m tall and 10 cm dbh. The significant change in species composition and forest structure above c. 615 m asl could be due to the variation in parent rock material and soils. As described above, the parent rock above 580 m asl is microgranite with mafic minerals and the soil is very shallow. The change in the parent rock, soil and mineral composition accompanied a change in the flora while the very shallow soil possibly constrained root growth, resulting in smaller trees (Adzmi pers. comm.).

The Flora

The expedition recorded 584 taxa of seed plants from 280 genera and 91 families (see Appendix 1). Of the recorded taxa, 479 were dicots, while 102 and 3 were monocots and gymnosperms respectively.

Table 2 provides a list of the ten most diverse families in terms of species richness. Euphorbiaceae is ranked first, followed by Palmae, Dipterocarpaceae, Rubiaceae and Annonaceae. The appearance of these families as top ranking families in Gunung Aais is not unexpected and is comparable to the composition in other areas in Peninsular Malaysia such as the lowlands of the adjacent Gunung Mandi Angin (Cockburn 1969), Belum Forest Reserve, Perak (Chua *et al.* 2000) and Krau Wildlife Reserve, Pahang (Chua and Saw 2006).

Table 2. Ten most diverse families in terms of taxon diversity and the percentage of Peninsular Malaysian taxa represented in Gunung Aais FR.

Family	Genera	Taxa*	% Peninsular Malaysian taxa found in Gunung Aais FR	Ranking of the percentage of the Peninsular Malaysian taxa found in Gunung Aais FR
Euphorbiaceae	21	51 (368)	13.9	6
Palmae	12	39 (198)	20.2	3
Dipterocarpaceae	5	30 (157)	19.1	4
Rubiaceae	19	26 (562)	4.6	10
Annonaceae	14	23 (202)	11.4	8
Guttiferae	4	22 (120)	18.3	5
Anacardiaceae	8	21 (74)	28.4	2
Myrtaceae	3	20 (215)	9.3	9
Zingiberaceae	9	19 (159)	11.9	7
Myristicaceae	4	18 (53)	34.0	1

* Figure in parentheses indicates the total number of taxa found in Peninsular Malaysia (Turner 1995).

These families have the highest diversity in the lowland and hill forests and they, with the exception of Dipterocarpaceae, are predominantly understorey species. One notable feature in Table 2 is the family Zingiberaceae. This family has rarely appeared as one of the ten top ranking families in many locality-based checklists. Two reasons may account for this—firstly, greater attention was given to this family and secondly, the expedition area has indeed a rich diversity of gingers. Peninsular Malaysia is known to have about 18 genera of gingers (Larsen *et al.* 1999); 9 genera were documented from this small area and the percentage of Peninsular Malaysia taxa represented here was 11.9 (Table 2).

The most diverse monocot family in Gunung Aais was undoubtedly the Palmae, represented by 12 genera and 39 taxa (Table 2). In this family, rattans were highly diverse with 5 genera and 25 taxa. The most speciose genera were *Calamus* (12 taxa) and *Daemonorops* (7 taxa). Two species of *Ceratolobus* were encountered in the area, i.e., *C. kingianus* (see under Plants of Botanical Interest) and *C. subangulatus*. Only *Calospatha*, *Myrialepis* and *Plectocomia* were not encountered. This area is, not surprisingly, rich in Palmae; the expedition area, estimated at 1,600 ha, houses 20.2% of the palm species in Peninsular Malaysia. Such diversity is reflective of a typical lowland dipterocarp forest in Peninsular Malaysia.

The five most speciose genera in the Gunung Aais area were *Syzygium* (Myrtaceae, 17 taxa), *Shorea* (Dipterocarpaceae, 14 taxa), *Diospyros* (Ebenaceae,

13 taxa), *Calamus* (Palmae, 12 taxa) and *Aporosa* (Euphorbiaceae, 10 taxa). A total of 10.9% (64 taxa) of the Gunung Aais flora is endemic in Peninsular Malaysia. Families with the highest number of endemic taxa were Palmae (7), Gesneriaceae (5) and Euphorbiaceae (5). The genera with the highest number of endemic taxa were *Calamus* (3) and *Henckelia* (3).

Table 3 shows that at least 365 taxa in the expedition area, i.e. 62.2 %, were encountered only once—closer inspection of the checklist, however, indicates that many of these species are in fact common and widespread in Peninsular Malaysia. This result is due to the short survey conducted. Table 3 clearly indicates that the three top ranking families did not differ between localities, with the exception of Jeram Perahu where Dipterocarpaceae was replaced with Annonaceae. As mentioned above, the families are very diverse in the lowland and hill dipterocarp forests and therefore it is not surprising to have such a result. Many tree species are known to be more spatially dispersed, often scattered in small numbers through a large area. There are, however, some species unique to the area and/or rare in the Peninsula; these are provided in the section on plants of botanical interest.

Plants of botanical interest

- *Habenaria paradiseoides* (Orchidaceae, *Markandan FRI 49202*) is a grass-like terrestrial orchid found along Sungai Tembeling. This low herb with long inflorescence up to 55 cm was found growing on sandy soil at rocky riverbanks of Sungai Tembeling. The species is a new record for Peninsular Malaysia and the collection is the first for Pahang. Prior to this, the species was only known in the Jambi Province, Sumatra (Jutta and Faridah 2005).
- *Scaphochlamys laxa* (Zingiberaceae, *Sam FRI 49057; Lau FRI 49856*), a new endemic species described from Jengai Forest Reserve, Terengganu (Sam and Saw 2005), was found at Sungai Lurut. Here, this short

Table 3. Number of taxa and the three top ranking families for each trail in Gunung Aais FR

Locality	No. of taxa	No. of taxa confined to the locality	Percentage	Three top ranking families and the number of taxa
Sungai Erak	258	99	16.9	Euphorbiaceae (26), Palmae (21), Dipterocarpaceae (14)
Sungai Lurut	253	101	17.2	Euphorbiaceae (27), Palmae (24), Dipterocarpaceae (14)
Gunung Aais	241	109	18.6	Palmae (23), Euphorbiaceae (21), Dipterocarpaceae (19)
Jeram Perahu	195	56	9.5	Euphorbiaceae (22), Palmae (16), Annonaceae (10)

rhizomatous herb grows abundantly on shaded flat and undulating land in the lowland dipterocarp forest. The plant can be easily distinguished by its almost rounded leaf blade and long inflorescence. This population extends its distribution to Pahang.

- *Ceratolobus kingianus* (Palmae, *Chua & Mustapa FRI 46698*) is an endemic, slender clustering rattan 5-8 m long occurring in the lowland forests and swamps of Perak, Pahang and Terengganu. At Gunung Aais, it was found along Sungai Erak and behind the base camp at Jeram Perahu. It is recorded to inhabit seasonally flooded freshwater swamp forest; the species at Gunung Aais seemed to show a similar habitat preference. It has also been recorded in adjacent areas such as the Sungai Nipah Forest Reserve and Sungai Loh.
- *Eugeissona brachystachys* (Palmae, *Chua and Mustapa FRI 46694*), which grows to 6 m tall, is an endemic, stemless feather palm recorded from the lowland forests of Terengganu and Pahang. In the expedition area, however, the population occurs at an elevation above 575 m asl. Many individuals at Gunung Aais were flowering and fruiting at that time.
- *Anisophyllea reticulata* (Anisophylleaceae, *Chan T363*) is supposedly rare. To date, it is only known from its type locality in Ulu Sungai Anak Endau in Pahang. In the expedition area, it was commonly encountered in undulating lowlands above riparian threshold to mid elevation at Gunung Aais. It has been encountered several times in the seraya-dominated forest at Gunung Aais.
- *Begonia rajah* (Begoniaceae, *Sam FRI 49116*), a rare endemic of Peninsular Malaysia, was found growing on a boulder in a fast flowing, shaded stream near the Jeram Perahu base camp. Comprising only eight individuals, the plants were seen at that time growing above the water level but below the flood zone. The population was extremely small; a search for other populations along the stream was unsuccessful. Despite its rarity, this begonia has a long history of cultivation because of its pretty variegated leaves (Kiew 2005). With this find, the species now occurs from north central Johor (Endau State Park) to north Pahang and Terengganu (Kiew 2005).
- *Henckelia pyroliflora* (Gesneriaceae, *Sam FRI 49108*) is a rare Peninsular Malaysia endemic. The plant is recorded as usually growing on rocks along slightly shaded riverbanks, but at Gunung Aais, the population grows on lightly shaded steep slopes, from 575 to 780 m at the summit. This is a new habitat recorded for *H. pyroliflora*.

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Appendix 1: Preliminary checklist of vascular plants in Gunung Aais Forest Reserve, Peninsular Malaysia, arranged according to gymnosperms, dicotyledons and monocotyledons.

Note: Please refer to Map 1 and Table 1 for collecting localities. Collecting locality number refers to trail number.

1 = Trail from the base camp at Jeram Perahu to Sungai Erak;

2 = Trail along Sungai Lurut;

3 = Trail from the base camp to Gunung Aais; and

4 = Jeram Perahu

E = Endemic

The conservation status for the taxon is extracted from Oldfield *et al.* 1998.

All voucher collections have the collection number indicated in parentheses. Those without such references were sighted records.

Family	Species	1	2	3	4	E	Conservation status
Cycadaceae	<i>Cycas</i> sp.			+			
Gnetaceae	<i>Gnetum gnemon</i> L. var. <i>gnemon</i> (T282)		+				
Podocarpaceae	<i>Dacrydium elatum</i> (Roxb.) Wall. ex Hook. (T450)			+			
	<i>Podocarpus neriiifolius</i> D. Don (T461)			+			
Acanthaceae	<i>Chroesthes longifolia</i> (Wight) B. Hansen (FRI 49062)		+				
	<i>Staurogyne cf. malaccensis</i> C.B. Clarke (FRI 49111)			+			
	<i>Staurogyne longifolia</i> (Nees) Kuntze (FRI 49070)		+				
Anacardiaceae	<i>Bouea oppositifolia</i> (Roxb.) Meisn. (T70)	+	+	+	+		
	<i>Buchanania sessifolia</i> Blume (T148)	+					
	<i>Gluta aptera</i> (King) Ding Hou (T323, T464)		+	+			
	<i>Gluta malayana</i> (Corner) Ding Hou (T323)		+				
	<i>Gluta wallitchii</i> (Hook.f.) Ding Hou (T234)		+				
	<i>Gluta</i> sp. 1 (T349)	+					
	<i>Mangifera foetida</i> Lour. (T351)	+					
	<i>Mangifera griffithii</i> Hook.f. (T215, T400)		+	+			
	<i>Mangifera macrocarpa</i> Blume (T302)		+				VU A1c
	<i>Mangifera magnifica</i> Kochummen (T51)	+					
	<i>Mangifera quadrifida</i> Jack (T41, T346)	+	+				
	<i>Melanochyla angustifolia</i> Hook.f. (T84)	+	+	+	+		

Family	Species	1	2	3	4	E	Conservation status
Anisophylleaceae	<i>Melanochyla fulvinervis</i> (Blume) Ding Hou (T227)		+				
	<i>Melanochyla tomentosa</i> Hook.f.			+			
	<i>Melanochyla</i> sp. 1 (T453)			+			
	<i>Melanochyla</i> sp. A (T127)			+			
	<i>Parishia paucijuga</i> Engl. (T427)	+					
	<i>Pentaspadon motleyi</i> Hook.f. (T443)			+			DD
	<i>Pentaspadon velutinus</i> Hook.f.			+			
	<i>Swintonia floribunda</i> Griff. (T131, T199, T297, T497)			+	+		
	<i>Swintonia schwenkii</i> (Tejism. & Binn.) Tejism. & Binn. (T447)			+			
	<i>Anisophyllea apetala</i> Scort. ex King (T244)			+			VU B1+2a
	<i>Anisophyllea corneri</i> Ding Hou (T279, T395, T468)			+			
	<i>Anisophyllea reticulata</i> Kochummen (T363)			+			
	<i>Anaxagorea javanica</i> Blume var. <i>javanica</i> (T44, Chung & Angan RC 120)			+		+	E
	<i>Cananga latifolia</i> (Hook.f. & Thomson) Finet & Gagnep.			+		+	
	<i>Cyathocalyx pruniferus</i> (Maingay ex Hook.f. & Thomson) J.Sinclair (T140)			+			E
	<i>Cyathocalyx scorechinii</i> (King) J.Sinclair (T318, T431)			+			E
<i>Cyathocalyx sumatranus</i> Scheff. (T338)	+						
<i>Dendrokingstonia nervosa</i> (Hook.f. & Thomson) Rauschert (T437)			+				
<i>Goniothalamus tortilipetalus</i> M.R.Hend. (T118, T499)			+		+		
<i>Goniothalamus</i> sp. (Chung & Angan RC 156)			+		+		
<i>Mezzettia parviflora</i> Becc. (T124)			+				
<i>Mitrella kentii</i> (Blume) Miq. (Chung & Angan RC 147)			+				
<i>Monocarpia marginalis</i> (Scheff.) J.Sinclair (T111)			+				
<i>Orophea enterocarpa</i> Maingay ex Hook.f. & Thomson			+		+		
<i>Phaeanthus ophthalmicus</i> (Roxb. ex G.Don) J.Sinclair (T500)			+		+		
<i>Polyalthia cauliflora</i> Hook.f. & Thomson var. <i>beccarii</i> (King) J.Sinclair (T128)			+				
<i>Polyalthia cauliflora</i> Hook.f. & Thomson var. <i>cauliflora</i> (T106)	+						
<i>Polyalthia lateriflora</i> (Blume) King (T64, T423)	+						
<i>Polyalthia rumphii</i> (Blume) Merr. (T298)	+						
<i>Polyalthia sumatrana</i> (Miq.) Kurz (T87, T331)	+						

Family	Species	1	2	3	4	E	Conservation status
Apocynaceae	<i>Popowia fusca</i> King (T99)	+		+			E
	<i>Popowia pisocarpa</i> (Blume) Endl. (Chung & Angan RC 150)				+		
	<i>Stelechocarpus cauliflorus</i> (Scheff.) R.E.Fr.	+			+		
	<i>Xylopia caudata</i> Hook.f. & Thomson (T77)	+			+		
	<i>Xylopia malayana</i> Hook.f. & Thomson var. <i>malayana</i> (T5, T201)	+			+		
	<i>Alstonia angustiloba</i> Miq.	+			+		
	<i>Alstonia scholaris</i> (L.) R.Br. (T3)	+			+		
	<i>Dyera costulata</i> (Miq.) Hook.f. (T498)	+			+		
	<i>Hunteria zeylanica</i> (Retz.) Gardn. ex Thwaites (T72)	+			+		
	<i>Ilex cymosa</i> Blume (Chung & Angan RC 146)	+			+		
Aquifoliaceae	<i>Ilex</i> sp. 1 (T480)			+			
	<i>Schefflera oxyphylla</i> (Miq.) R. Vig. (Chung & Angan RC 140)	+		+			
Araliaceae	<i>Thottea grandiflora</i> Rottb. (H 23)	+		+			
	<i>Begonia rajah</i> Ridl. (FRI 49116)	+		+			E
Bignoniaceae	<i>Begonia sinuata</i> var. <i>sinuata</i> Wall. ex Meisn. (FRI 49092)	+					
	<i>Radermachera glandulosa</i> (Blume) Miq. (Chung & Angan RC 135)		+				
	<i>Durio graveolens</i> Becc.	+		+			
	<i>Durio griffithii</i> (Mast.) Bakh. (T122, T277)	+		+			
	<i>Durio singaporensis</i> Ridl. (T470)	+		+			
	<i>Canarium littorale</i> Blume (T180)	+		+			E
	<i>Canarium megalanthum</i> Merr. (T345)	+		+			
	<i>Canarium pilosum</i> Benn. (T214)	+		+			
	<i>Dacryodes costata</i> (Benn.) H.J.Lam (T332, T417)	+		+			
	<i>Dacryodes incurvata</i> (Engl.) H.J.Lam (T102, T347)	+		+			
Bombacaceae	<i>Dacryodes laxa</i> (Benn.) H.J.Lam (T69, T229)	+		+			
	<i>Dacryodes longifolia</i> (King) H.J.Lam (T378)	+		+			
	<i>Dacryodes rostrata</i> (Blume) H.J.Lam (T388)	+		+			
	<i>Dacryodes rugosa</i> (Blume) H.J.Lam (T76)	+		+			E
	<i>Santiria apiculata</i> Benn. var. <i>apiculata</i> (T228, T430)	+		+			
	<i>Santiria griffithii</i> (Hook.f.) Engl. (T132)	+		+			

Family	Species	1	2	3	4	E	Conservation status
Celastraceae	<i>Santiria laevigata</i> Blume (T13, T217)	+	+	+	+		
	<i>Santiria oblongifolia</i> Blume				+		
	<i>Santiria tomentosa</i> Blume (T141, T236)	+	+	+			
	<i>Bhesa paniculata</i> Arn. (T10)	+					
	<i>Euonymus javanicus</i> Blume (T60)	+					
	<i>Kokoona littoralis</i> Laws. (T89)	+					
	<i>Kokoona reflexa</i> (Laws.) Ding Hou (T137)	+					
	<i>Lophopetalum javanicum</i> (Zoll.) Turcz (T496)				+		
	<i>Lophopetalum subobovatum</i> King (T502)				+		
	<i>Atuna nanmodes</i> (Kosterm.) Kosterm. (Chung & Angan RC 152)				+		
Chrysobalanaceae	<i>Atuna racemosa</i> Raf. ssp. <i>excelsa</i> (Jack) Prance (T81, T438)	+		+			
	<i>Licania splendens</i> (Korth.) Prance (T27)	+					
	<i>Parinari oblongifolia</i> Hook.f. (T153)	+					
	<i>Parinari parva</i> Kosterm. (T357, T364)	+			+		
	<i>Chromolaena odorata</i> (L.) R.M. King & H. Rob. (H 3)		+				
	<i>Agelaea macrophylla</i> (Zoll.) Leenh.						
	<i>Agelaea tridentata</i> (L.) D.F. Austin & Staples (FRI 47250)		+				
	<i>Xenostegia pentandra</i> Blume ssp. <i>scortechinii</i> (King) K.M. Matthew (T393)		+		+		
	<i>Mastixia pentandra</i> Blume ssp. <i>scortechinii</i> (King) K.M. Matthew (T393)		+		+		
	<i>Ctenolophon parvifolius</i> Oliv. (T256, T367, T458)		+				
Cucurbitaceae	<i>Hodgsonia macrocarpa</i> (Blume) Cogn. (FRI 49080)		+				
	<i>Acrotrema costatum</i> Jack (H 21)	+					
	<i>Dillenia indica</i> L. (T307)		+				
	<i>Dillenia reticulata</i> King var. <i>reticulata</i> (T4, T189)		+				
	<i>Tetracera</i> sp. (FRI 46687)		+				
	<i>Anisoptera curtisii</i> Dyer ex King (T462)		+				
	<i>Dipterocarpus costulatus</i> Slooten (T86, T150, T255)		+		+		CRA1cd+2cd
	<i>Dipterocarpus crinitus</i> Dyer (T259, T350)		+		+		EN A1cd+2cd
	<i>Dipterocarpus gracilis</i> Blume		+		+		EN A1cd+2cd
	<i>Dipterocarpus grandiflorus</i> (Blanco) Blanco (T93)		+		+		CRA1cd+2cd
<i>Dipterocarpus kunstleri</i> King (T306)		+		+		CRA1cd+2cd	

Family	Species	1	2	3	4	E	Conservation status
	<i>Dipterocarpus oblongifolius</i> Blume				+		
	<i>Hopea dyeri</i> F. Heim (T382)			+			
	<i>Hopea montana</i> Symington (T419)			+			CR B1+2c, D1
	<i>Hopea pubescens</i> Ridl. (T162, T254, T435)	+	+				
	<i>Shorea atrinervosa</i> Symington (T355, T362)	+		+			E
	<i>Shorea balanocarpoides</i> Symington (T78, T449, T489)	+		+			EN A1cd
	<i>Shorea bracteolata</i> Dyer (T175, T287)	+		+			EN A1cd+2cd
	<i>Shorea curtisii</i> Dyer ex King ssp. <i>curtisii</i> (T469)			+			
	<i>Shorea lepidota</i> (Korth.) Blume			+			CR A1cd
	<i>Shorea leprosula</i> Miq. (T30, T240)	+	+				EN A1cd
	<i>Shorea longisperma</i> Roxb. (T202)	+	+				CR A1cd, C2a
	<i>Shorea macroptera</i> Dyer (T57, T193)	+	+	+			CR A1cd
	<i>Shorea multiflora</i> (Burck) Symington (T514)			+			
	<i>Shorea ochrophloia</i> Struwnell ex Symington (T164, T441)	+		+			CR A1cd
	<i>Shorea ovalis</i> (Korth.) Blume ssp. <i>ovalis</i> (T326)			+			EN A1cd
	<i>Shorea parvifolia</i> Dyer ssp. <i>parvifolia</i> (T154, T203)	+	+	+			EN A1cd
	<i>Shorea pauciflora</i> King (T92, T192)	+	+	+			EN A1cd
	<i>Shorea resinosa</i> Foxw. (T284, T333)			+			CR A1cd
	<i>Vatica bella</i> Slooten (T456)			+			CR A1cd
	<i>Vatica heteroptera</i> Symington (T380, T403, T477)			+			CR A1c, C2a
	<i>Vatica nitens</i> King (T218)			+			EN A1cd
	<i>Vatica pauciflora</i> (Korth.) Blume (T391, T473)			+			EN A1c
	<i>Vatica stapfiana</i> (King) Slooten (T65)			+			EN A1c
	<i>Vatica venulosa</i> Blume (T79, T264, T413, T455)	+	+	+			CR A1c
Ebenaceae	<i>Diospyros apiculata</i> Hiern (T290, T319)	+	+	+			
	<i>Diospyros buxifolia</i> (Blume) Hiern (T100)	+	+	+			
	<i>Diospyros lanceifolia</i> Roxb. (T369)			+			
	<i>Diospyros latispala</i> Ridl. (T293)			+			
	<i>Diospyros malabarica</i> (Descr.) Kotel. (T198)	+	+				

Family	Species	1	2	3	4	E	Conservation status
Elaeocarpaceae	<i>Diospyros pilosanthera</i> Blanco var. <i>oblonga</i> (Wall. ex G. Don) Ng	+					
	<i>Diospyros rufa</i> King & Gamble (T119, T510)	+			+		E
	<i>Diospyros singaporensis</i> Bakh. (T507)				+		E
	<i>Diospyros sumatrana</i> Miq. (T63)	+	+				
	<i>Diospyros venosa</i> Wall. ex A. DC. var. <i>venosa</i> (T253, T341, T418)	+	+	+			
	<i>Diospyros</i> sp. 1 (T62, T247, T376)	+	+	+			
	<i>Diospyros</i> sp. 2 (T486, T492)			+			
	<i>Diospyros</i> sp. 3 (T54)	+					
	<i>Elaeocarpus floribundus</i> Blume (T436)			+			
	<i>Elaeocarpus polystachyus</i> Wall. ex Müll. Berol. (T74)	+					E
	<i>Elaeocarpus salletianus</i> Ng						
	<i>Elaeocarpus stipularis</i> Blume					+	E
	<i>Elaeocarpus</i> sp. 1 (T476)			+			
	<i>Syphelia malayana</i> (Jack) Spr.			+			
	<i>Rhododendron malayanum</i> Jack (FRI 49102, T471)			+			
Epacridaceae Ericaceae	<i>Vaccinium viscifolium</i> King & Gamble var. <i>bicalcaratum</i> Sleumer (T479, T481)			+			E
	<i>Agrostistachys gaudichaudii</i> Müll. Arg. (T508)						
	<i>Agrostistachys longifolia</i> (Wight) Benth. var. <i>leptostachya</i>			+			
	<i>Antidesma coriaceum</i> Tul. (T88, T160)	+		+			
	<i>Antidesma cuspidatum</i> Müll. Arg. (T144)	+					
	<i>Antidesma pendulum</i> Hook. f. (T37)	+					E
	<i>Antidesma salicinum</i> Ridl. (Chung & Angan RC 122, Chung & Angan RC 145)	+		+			
	<i>Antidesma velutinosum</i> Blume (T278, Chung & Angan RC 137)			+			
	<i>Aporosa aurea</i> Hook. f.						
	<i>Aporosa benthamiana</i> Hook. f. (T121, T421)	+		+			
	<i>Aporosa bracteosa</i> Pax & K. Hoffm.			+			
	<i>Aporosa falcifera</i> Hook. f. (T104, T261, T317, T377)	+		+			
	<i>Aporosa microstachya</i> (Tul.) Müll. Arg. (T115)	+		+			
	<i>Aporosa nervosa</i> Hook. f.						
	<i>Aporosa prainiana</i> King ex Gage (T82)	+		+			E

Family	Species	1	2	3	4	E	Conservation status
	<i>Aporosa symplocoides</i> (Hook.f.) Gage (T223)		+				
	<i>Aporosa</i> sp. 1 (T47)	+					
	<i>Aporosa</i> sp. 2 (T513)						
	<i>Baccaurea bracteata</i> Müll.Arg. (T303)		+				+
	<i>Baccaurea kunstleri</i> King ex Gage (T49)	+					+
	<i>Baccaurea parviflora</i> (Müll.Arg.) Müll.Arg. (T52, T237)	+					
	<i>Baccaurea racemosa</i> (Reinw.) Müll.Arg.						
	<i>Baccaurea reticulata</i> Hook.f. (T503)						+
	<i>Baccaurea sumatrana</i> Müll.Arg. (T265)		+				
	<i>Blumeodendron calophyllum</i> Airy Shaw (T336)	+					
	<i>Blumeodendron kurzii</i> (Hook.f.) J.J.Sm. (T67, T414, T433)	+					+
	<i>Blumeodendron subrotundifolium</i> (Elmer) Merr. (T171)	+					+
	<i>Chondrostylis kunstleri</i> (King ex Hook.f.) Airy Shaw (T48, Chung & Angan RC 113)	+					+
	<i>Cleistanthus</i> sp. 1 (T113)	+					
	<i>Croton laevifolius</i> Blume (T9)	+					
	<i>Drypetes kikir</i> Airy Shaw (T292)						
	<i>Drypetes longifolia</i> (Blume) Pax & K.Hoffm. (T305)	+					
	<i>Drypetes pendula</i> Ridl. (T149, T212)	+					+
	<i>Elatерiospermum tapos</i> Blume (T188)	+					+
	<i>Endospermum diadenum</i> (Miq.) Airy Shaw (T187)	+					+
	<i>Glochidion glomeratum</i> (Miq.) Boerl. (T6, T194)	+					
	<i>Glochidion sericeum</i> Hook.f. (T2)	+					
	<i>Homonoia riparia</i> Lour.						+
	<i>Macaranga gigantea</i> (Rchb.f. & Zoll.) Müll.Arg. (T185)		+				
	<i>Macaranga hypoleuca</i> (Rchb.f. & Zoll.) Müll.Arg. (T245)		+				
	<i>Macaranga triloba</i> (Blume) Müll.Arg. (T32, T250)	+					
	<i>Mallotus griffithianus</i> Hook.f. (T53)						
	<i>Mallotus kingii</i> Hook.f. (T405)	+					+
	<i>Mallotus macrostachyus</i> (Miq.) Müll.Arg. (T206)		+				
	<i>Mallotus oblongifolius</i> (Miq.) Müll.Arg. (T190)	+					+

Family	Species	1	2	3	4	E	Conservation status
Fagaceae	<i>Mallotus penangensis</i> Müll.Arg.			+	+		E
	<i>Microdesmis caseariifolia</i> Planch. (T73, Chung & Angan RC 128)	+	+				
	<i>Neoscortechinia kingii</i> (Hook.f.) Pax & K.Hoffm. (T96, T210, T224)	+	+	+	+		
	<i>Paracroton pendulus</i> (Hassk.) Miq. (T75)	+	+	+	+		
	<i>Pimelodendron griffithianum</i> (Müll.Arg.) Benth. (T165)	+	+	+	+		
	<i>Psychopyxis capui-medusae</i> (Hook.f.) Ridl. (T257, T329, T442)	+	+	+			E
	<i>Sapium discolor</i> (Champ. ex Benth.) Müll.Arg. (T243)		+				
	<i>Castanopsis rhamnifolia</i> (Miq.) A. DC. (T17)	+			+		
	<i>Castanopsis schefferiana</i> Hance (T478)						
	<i>Lithocarpus curtisii</i> (King ex Hook.f.) A.Camus (T325)	+		+			E
	<i>Lithocarpus encleiscarpus</i> (Korth.) A.Camus						
	<i>Lithocarpus ewyckii</i> (Korth.) Rehder (T330)	+				+	
	<i>Lithocarpus lucidus</i> (Roxb.) Rehder (T474)			+			
	<i>Lithocarpus rassa</i> (Miq.) Rehder (T322)	+					
	<i>Lithocarpus wallichianus</i> (Lindl. ex Hance) Rehder (T145, T445)	+		+	+		
	<i>Quercus argentata</i> Korth. (T439)						
	<i>Quercus nivea</i> King (T157)	+					
	<i>Casearia capitellata</i> Blume (T26)	+					
	<i>Erythrospermum candidum</i> (Becc.) Becc. (T454)			+			
	<i>Homalium dictyonurum</i> (Hance) Warb. (T268)	+				+	
<i>Hydnocarpus castanea</i> Hook.f. & Thomson (T231)	+						
<i>Hydnocarpus kunstleri</i> (King) Warb. var. <i>kunstleri</i> (T120)	+	+	+	+			
<i>Hydnocarpus nana</i> King (T205, Chung & Angan RC 129)	+	+	+			E	
<i>Hydnocarpus woodii</i> Merr. (T103)	+				+	LR/nt	
<i>Hydnocarpus wrayi</i> King					+		
<i>Ryparosa fasciculata</i> King (T29)	+	+	+	+		E	
<i>Ryparosa hullettii</i> King					+		
<i>Ryparosa wallichii</i> Ridl. (T308)							
<i>Cyrtandra cupulata</i> Ridl. (FRI 49078)	+				+	E	
<i>Cyrtandra wallichii</i> (C.B.Clarke) B.L.Burtt (FRI 49075)	+				+	E	
Flacourtiaceae							
Gesneriaceae							

Family	Species	1	2	3	4	E	Conservation status
Guttiferae	<i>Henckelia bombycinus</i> (Ridl.) A. Weber (FRI 49071)		+				E
	<i>Henckelia floribunda</i> (M.R. Hend.) A. Weber (FRI 49054, 49084)	+	+	+	+		E
	<i>Henckelia pyroliiflora</i> (Ridl.) A. Weber (FRI 49108)			+			E
	<i>Henckelia</i> sp. 1 (FRI 49093, 49103)	+		+			
	<i>Henckelia</i> sp. 2 (Section Heterobocea) (B.L. Burt) A. Weber (FRI 49113)	+		+			
	<i>Calophyllum depressinervosum</i> M.R.Hend. & Wyatt-Smith. (T152)	+		+			
	<i>Calophyllum wallichianum</i> Planch. & Triana var. <i>incrassatum</i> (T36, T392)			+			
	<i>Calophyllum</i> sp. A (T368, T465)			+			
	<i>Calophyllum</i> sp. B (T501)					+	
	<i>Calophyllum</i> sp. C (T146)	+					
	<i>Calophyllum</i> sp. D (T366)			+			
	<i>Calophyllum</i> sp. E (T273)		+				
	<i>Calophyllum</i> sp. F (T324)		+				
	<i>Cratoxylum formosum</i> (Jack) Dyer					+	
	<i>Cratoxylum maingayi</i> Dyer (T381)				+		
	<i>Garcinia atroviridis</i> Griff. ex T.Anderson (T342)	+					
	<i>Garcinia bancana</i> (Miq.) Miq. var. <i>bancana</i> (T416)			+			
	<i>Garcinia hombroniana</i> Pierre (T125, T352, Chung & Angan RC 116)	+				+	
	<i>Garcinia malaccensis</i> Hook.f. (T135, T266)	+		+		+	
	<i>Garcinia opaca</i> King var. <i>dumosa</i> Whitmore (T274)			+			E
	<i>Garcinia parvifolia</i> (Miq.) Miq. (T182)	+					
	<i>Garcinia scortechinii</i> King (T389)				+		
	<i>Garcinia urophylla</i> Scott. ex King (T271)			+			
<i>Mesua ferrea</i> L. (T134, T275)	+		+				
<i>Mesua grandis</i> (King) Kosterm. (T246)	+		+				
<i>Mesua nuda</i> Kosterm. ex Whitmore (T286)			+				
<i>Mesua</i> sp. 1 (T371)			+				
<i>Gomphandra quadrifida</i> (Blume) Sleumer var. <i>ovalifolia</i> (Ridl.) Sleumer (T46)	+			+			
<i>Stemonurus malaccensis</i> (Mast.) Sleumer (T173, T415)	+			+			
<i>Irvingia malayana</i> Oliv. ex Benn. (T97, T385, Chung & Angan RC 154)	+				+		
Icacinaceae							
Irvingiaceae							

Family	Species	1	2	3	4	E	Conservation status
Lauraceae	<i>Alseodaphne intermedia</i> Kosterm. (T85, T401)	+		+			
	<i>Alseodaphne peduncularis</i> (Wall. ex Nees) Meisn. (T176)	+					
	<i>Beilschmiedia lucidula</i> (Miq.) Kosterm. (T375)			+			
	<i>Cinnamomum iners</i> Reinw. (T8)	+					
	<i>Cinnamomum mollissimum</i> Hook.f. (T42)	+	+				E
	<i>Cinnamomum saffrol</i> Kosterm. (T365, T475)			+			E
	<i>Cryptocarya rugulosa</i> Hook.f. (T71, T440)	+		+		+	
	<i>Endiandra</i> sp. A (T488)			+			
	<i>Litsea costalis</i> (Nees) Kosterm. (T339)	+		+			
	<i>Litsea elliptica</i> Blume (T429)			+			
	<i>Litsea ferruginea</i> (Blume) Blume (T208, Chung & Angan RC 119)	+	+				
	<i>Litsea grandis</i> (Wall. ex Nees) Hook.f. (T356)	+				+	
	<i>Litsea lancifolia</i> (Roxb. ex Wall.) Hook.f. var. <i>lancifolia</i> (T313)			+			
	<i>Litsea machilifolia</i> Gamble (T133, T238, T354)	+	+			+	
	<i>Litsea nidularis</i> Gamble (T340, T396)	+		+			
	<i>Litsea sessiliflora</i> Hook.f. (T390)			+			
	<i>Litsea</i> sp. A (T112, T143)	+					
	<i>Nothaphoebe umbelliflora</i> Blume (T239, T511)			+		+	
	<i>Barringtonia macrostachya</i> (Jack) Kurz (T126, Chung & Angan RC 157)	+	+			+	
	<i>Barringtonia pendula</i> (Griff.) Kurz (T353)	+				+	
<i>Barringtonia scortechinii</i> King			+		+		
Lecythidaceae	<i>Archidendron bubalinum</i> (Jack) I.C.Nielsen (T95)	+	+			+	
	<i>Archidendron clypearia</i> (Jack) I.C.Nielsen ssp. <i>clypearia</i> var. <i>clypearia</i> (T35)	+					
	<i>Archidendron</i> sp. 1 (T383)			+			
	<i>Callerya atropurpurea</i> (Wall.) Schot (T359)	+					
	<i>Cynometra malaccensis</i> Meeuwen (T511)						
	<i>Cynometra ramiflora</i> L. (T211, T141, Chung & Angan RC 130, Chung & Angan RC 138)	+	+			+	
	<i>Dialium platysepalum</i> Baker (T161, T276, T448)	+	+			+	
	<i>Intsia palembanica</i> Miq. (T39)	+				+	
	<i>Koompassia malaccensis</i> Maing. ex Benth. (T19, T209)	+	+			+	

Family	Species	1	2	3	4	E	Conservation status
	<i>Parkia singularis</i> Miq. (T412)			+			
	<i>Parkia speciosa</i> Hassk. (T310)		+				
	<i>Parkia timoriana</i> (DC.) Merr. (T24)	+					
	<i>Saraca cauliflora</i> Baker (T43)				+		
	<i>Sindora coriacea</i> (Baker) Maingay ex Prain (T55)		+		+		
Loganiaceae	<i>Fagraea racemosa</i> Jack ex Wall. (T151)						
Magnoliaceae	<i>Magnolia liliifera</i> (L.) Baill. var. <i>liliifera</i> (T407)			+			
Melastomataceae	<i>Melastoma malabathricum</i> L. (H 17)		+				
	<i>Clidemia hirta</i> (L.) D. Don (H 1)	+	+				
	<i>Memecylon dichotomum</i> (C.B.Clarke) King var. <i>dichotomum</i> (T289)		+				
	<i>Memecylon lilacinum</i> Zoll. & Moritzi (T482, Chung & Angan RC 132)		+				
	<i>Memecylon minutiflorum</i> Miq. (T155)	+					
	<i>Memecylon pubescens</i> (C.B.Clarke) King (T16, T174)	+					
	<i>Phyllogathis hispida</i> King (FRI 49101)			+			
	<i>Phyllogathis rotundifolia</i> (Jack) Blume (H 36)		+				
	<i>Pternandra coerulea</i> Jack (T249, Chung & Angan RC 143)		+				
	<i>Pternandra echinata</i> Jack (T18)	+					
	<i>Sonerila heterostemon</i> Naudin (FRI 49117)		+				
	<i>Sonerila moluccana</i> Roxb. (FRI 49067)						
	<i>Sonerila picta</i> Korth. (FRI 49099)						
	<i>Sonerila</i> sp. (FRI 49100)						
	<i>Aglaia exstipulata</i> (Griff.) W.Theob. (T493)						LR/nt
	<i>Aglaia hiernii</i> King (T428)				+		LR/nt
	<i>Aglaia leucophylla</i> King (T220)		+				LR/nt
	<i>Aglaia odoratissima</i> Blume (Chung & Angan RC 118)						
	<i>Aglaia sexipetala</i> Griff. (T178)	+					LR/nt
	<i>Aglaia tenuicaulis</i> Hiern (T225, Chung & Angan RC 139)	+	+				VU A1c
	<i>Chisocheton macrophyllus</i> King ssp. <i>macrophyllus</i>						
	<i>Chisocheton patens</i> Blume (T98)	+					
	<i>Chukrasia tabularis</i> A.Juss (186)	+	+				

Family	Species	1	2	3	4	E	Conservation status
Menispermaceae Moraceae	<i>Dysoxylum cauliflorum</i> Hiern (T170, Chung & Angan RC 117)	+					
	<i>Lansium domesticum</i> Corrêa (T105)	+	+				
	<i>Reinwardtiadendron cinereum</i> (Hiern) Mabb. (T348)	+					
	<i>Sandoricum koejape</i> (Burm.f.) Merr. (T312)	+	+	+			
	<i>Diploclostia kunstleri</i> (King) Diels (FRI 46699)						
	<i>Artocarpus dadah</i> Miq. (T328)						
	<i>Artocarpus gomezianus</i> Wall. ex Trécul (T446)						
	<i>Artocarpus integer</i> (Thunb.) Merr. var. <i>silvestris</i> Corner (T80)	+					
	<i>Artocarpus lanceifolius</i> Roxb. (T130, T291)	+	+	+			
	<i>Artocarpus lowii</i> King						
	<i>Artocarpus nitidus</i> Trécul ssp. <i>griffithii</i> (King) F.M.Jarrett (T262)						
	<i>Artocarpus rigidus</i> Blume (T320, T397)	+	+				
	<i>Artocarpus scortechinii</i> King (T14)	+	+				
	<i>Ficus grossularioides</i> Burm.f. var. <i>grossularioides</i> (T248)						
	<i>Ficus schwarzii</i> Koord. (T20)						
	<i>Gymnacranthera farquhariana</i> (Hook.f. & Thomson) Warb. var. <i>farquhariana</i> (T138, T216, T406)	+	+	+			
	<i>Gymnacranthera forbesii</i> (King) Warb. (T129)	+					
	<i>Horsfieldia brachiata</i> (King) Warb. (T504)						
	<i>Horsfieldia flocculosa</i> (King) Warb. (179)						
	<i>Horsfieldia polyspherula</i> (Hook.f.) J.Sinclair var. <i>polyspherula</i> (T299, T409)	+	+	+		E	VU B1+2c
<i>Horsfieldia sucosa</i> (King) Warb. (T327)							
<i>Horsfieldia tomentosa</i> Warb. (T269)							
<i>Horsfieldia wallichii</i> (Hook.f. & Thomson) Warb.							
<i>Horsfieldia</i> sp. 1 (T107)						LR/nt	
<i>Knema furfuracea</i> (Hook.f. & Thomson) Warb. (T169, T296)	+	+	+				
<i>Knema hookeriana</i> (Wall. ex Hook.f. & Thomson) Warb. (T136)	+						
<i>Knema patentinervia</i> (J.Sinclair) W.J.de Wilde (T66)	+						
<i>Knema stenophylla</i> (Warb.) J.Sinclair (T183)	+						
<i>Knema sumatrana</i> (Blume) W.J.de Wilde (T222)	+						

Family	Species	1	2	3	4	E	Conservation status
Myrsinaceae	<i>Myristica cinnamomea</i> King (T484)			+			
	<i>Myristica elliptica</i> Wall. ex Hook.f. & Thomson (T358)	+					
	<i>Myristica gigantea</i> King (T335, Chung & Angan RC 141)	+					
	<i>Myristica iners</i> Blume (T374)			+			
	<i>Ardisia colorata</i> Roxb. var. <i>colorata</i> (T309)		+				
	<i>Ardisia oxyphylla</i> Wall. ex A. DC. (T373, T466)			+			
	<i>Ardisia villosa</i> Roxb. (FRI 49064)		+				
	<i>Labisia pumila</i> (Blume) Fern.-Vill. (FRI 49055)		+				
	<i>Decaspermum parviflorum</i> (Lam.) A.J.Scott ssp. <i>quadrupartitum</i> (T25)	+					
	<i>Syzygium acuminatissimum</i> (Blume) DC. (T386)			+			
	<i>Syzygium anisosepalum</i> (Duthie) I.M.Turner				+		E
	<i>Syzygium duthieanum</i> (King) Masam. (T221, T285, T509)		+				E
	<i>Syzygium dyerianum</i> (King) P.Chantaranothai & J.Pam. (T434)			+			
	<i>Syzygium lineatum</i> (DC.) Merr. & L.M. Perry (Chung & Angan RC 151)		+				
	<i>Syzygium nigricans</i> (King) Merr. & L.M. Perry (T40, T379)			+			
<i>Syzygium subdecussatum</i> (Wall. ex Duthie) I.M.Turner (T260, T452)	+	+					
<i>Syzygium</i> sp. A (T109, T139)	+						
<i>Syzygium</i> sp. B (T108, T177)	+						
<i>Syzygium</i> sp. C (T45, T404)	+						
<i>Syzygium</i> sp. D (T294)			+				
<i>Syzygium</i> sp. E (T505)							
<i>Syzygium</i> sp. F (T410)				+			
<i>Syzygium</i> sp. G (T387, T485)			+				
<i>Syzygium</i> sp. H (T495)				+			
<i>Syzygium</i> sp. I (T370)			+				
<i>Syzygium</i> sp. J (T483)			+				
<i>Tristaniaopsis merguensis</i> (Griff.) Peter G. Wilson & J.T.Waterh. (T460)			+				
<i>Tristaniaopsis whiteana</i> (Griff.) Peter G. Wilson & J.T.Waterh. (Chung & Angan RC 123)	+						
<i>Nepenthes gracilis</i> Korth. (FRI 46693)			+				
<i>Brackenridgea hookeri</i> (Planch.) A.Gray				+			
Nepenthaceae							
Ochnaceae							

Family	Species	1	2	3	4	E	Conservation status
	<i>Campylopernum serratum</i> (Gaertn.) Bittrich & M.C.E.Amaral (T219)		+				
	<i>Euthemis leucocarpa</i> Jack (T472)			+			
	<i>Sauvagesia serrata</i> (Korth.) Sastre (FRI 49096, T472)			+	+		
	<i>Harmandia mekongensis</i> Pierre ex Baill. (T361)	+					
Oleaceae	<i>Ochanostachys amantacea</i> Mast. (T272)		+	+	+		DD
	<i>Scorodocarpus borneensis</i> (Baill.) Becc. (T172, T200)	+	+	+			
	<i>Strombosia ceylanica</i> Gardn. (T384)			+			
Opiliaceae	<i>Champereia manillana</i> (Blume) Merr. (T270)		+		+		
Oxalidaceae	<i>Sarcotheca griffithii</i> (Planch. ex Hook.f.) Hallier.f. (T168)	+					
Pandaceae	<i>Galearia fulva</i> (Tul.) Miq. (T426)			+			
	<i>Galearia maingayi</i> Hook.f. (T101)	+					
Pentaphragmataceae	<i>Pentaphragma ellipticum</i> var. <i>ellipticum</i> Poulsen A.D. (FRI 49066)		+		+		E
	<i>Pentaphragma ellipticum</i> var. <i>flocculosum</i> Poulsen A.D. (FRI 49095)						
Piperaceae	<i>Piper muricatum</i> Blume (FRI 49077)		+				
Polygalaceae	<i>Xanthophyllum amoenum</i> Chodat (T233)		+				
	<i>Xanthophyllum ellipticum</i> Korth. ex Miq. (T267)		+				
	<i>Xanthophyllum eurhynchum</i> Miq. ssp. <i>eurhynchum</i> (T94)		+				
	<i>Xanthophyllum griffithii</i> Hook.f. ex A.W.Benn. ssp. <i>angustifolium</i> (T156, T372)	+	+	+			
	<i>Xanthophyllum rufum</i> Benn. (T117)	+	+				
	<i>Xanthophyllum stipitatum</i> A.W.Benn. (T123)	+	+				
	<i>Xanthophyllum</i> sp. (Chung & Angan RC 142)	+	+				
Proteaceae	<i>Helicia petiolaris</i> Benn. (T408)			+			
Rhamnaceae	<i>Zizyphus</i> sp. (FRI 46700)			+			
Rhizophoraceae	<i>Gynotroches axillaris</i> Blume (T112)		+				
	<i>Pellacalyx axillaris</i> Korth.				+		
Rosaceae	<i>Atuna racemosa</i> Raf. ssp. <i>excelsa</i> (Jack) Prance (T163)	+					
	<i>Prunus arborea</i> (Blume) Kalkman var. <i>arborea</i> (T7)	+					
	<i>Acramthera pulchella</i> (Ridl.) K.M. Wong (H 60)			+			E
Rubiaceae	<i>Aidia densiflora</i> (Wall.) Masam. (T28)	+			+		
	<i>Argostemma longifolium</i> Benn. (FRI 49053, 49110)		+	+			

Family	Species	1	2	3	4	E	Conservation status
	<i>Diplospora lasiantha</i> Ridl. (Chung & Angan RC 114)	+					
	<i>Gaertnera oblanceolata</i> King & Gamble var. <i>diversifolia</i> (Ridl.) Beusekom (T467)		+				
	<i>Greenea corymbosa</i> (Jack) K. Schum. (Chung & Angan RC 148)		+				
	<i>Ixora concinna</i> Hook.f. (T394)			+			
	<i>Ixora grandifolia</i> var. <i>lanceifolia</i> Zoll. & Moritzi (FRI 49094)	+	+				
	<i>Ixora grandifolia</i> Zoll. & Moritzi var. <i>grandifolia</i> (Chung & Angan RC 133)						
	<i>Ixora javanica</i> (Blume) DC var. <i>javanica</i> (T167)	+					
	<i>Ixora pendula</i> Jack var. <i>pendula</i> (T 83)	+					
	<i>Lasianthus griffithii</i> Wight (Chung & Angan RC 131)		+		+		
	<i>Lasianthus maingayi</i> Hook.f. (Chung & Angan RC 136)		+				
	<i>Ochreinauclea maingayi</i> (Hook.f.) Ridsdale (T506)				+		
	<i>Ophiorrhiza</i> cf. <i>discolor</i> R.Br (FRI 49073)	+	+				
	<i>Pavetta</i> sp. A (T61)	+					
	<i>Porterandia anisophyllea</i> (Jack ex Roxb.) Ridl. (T204)	+	+				
	<i>Psychotria</i> sp. A (T34)	+					
	<i>Psychax</i> sp. 8 (T50)	+					
	<i>Rennellia speciosa</i> (Wall. ex Kurz) Hook.f. (Chung & Angan RC 155)				+		
	<i>Saprosma scortechinii</i> King & Gamble (Chung & Angan RC 149)			+	+		E
	<i>Tarenna stellulata</i> (Hook.f.) Ridl. (Chung & Angan RC 121)	+					
	<i>Timonius wrayi</i> King & Gamble (T425)			+			E
	<i>Urophyllum blumeanum</i> (Wight) Hook.f. (Chung & Angan RC 127)	+					
	<i>Urophyllum glabrum</i> Wall. (Chung & Angan RC 153)	+					
	<i>Urophyllum hirsutum</i> (Wight) Hook.f. (T343, Chung & Angan RC 115)	+			+		
Rutaceae	<i>Clausena excavata</i> Burm.f. (Chung & Angan RC 134)	+	+				
	<i>Glycosmis chlorosperma</i> Spreng. var. <i>chlorosperma</i> (T337)	+					
	<i>Melicope glabra</i> (Blume) T.G.Hartley (T311)	+	+				
Santalaceae	<i>Scleropyrum pentandrum</i> (Dennst.) Mabb. (T147)	+					
Sapindaceae	<i>Nephelium cuspidatum</i> Blume var. <i>ophioides</i> (Radlk.) Leenh. (T114, T399)	+					
	<i>Pometia pinnata</i> J.R.Forst. & G.Forst. (T197)	+	+				
	<i>Pometia ridleyi</i> King ex Radlk. (T11, T304)	+	+				

Family	Species	1	2	3	4	E	Conservation status
Sapotaceae	<i>Xerospermum noronhianum</i> (Blume) Blume (T258, T314)	+	+	+	+		
	<i>Madhuca kingiana</i> (Brace) H.J.Lam (T398)			+			
	<i>Palaquium clarkeanum</i> King & Gamble (T207)	+					
	<i>Palaquium gutta</i> (Hook.f.) Baill. (T283)	+					
	<i>Palaquium hexandrum</i> (Griff.) Baill. (T158, T432)	+					
	<i>Palaquium leiocarpum</i> Boerl. (T230, T420)	+					
	<i>Palaquium maingayi</i> (C.B.Clarke) King & Gamble (T263)	+					E
	<i>Palaquium microphyllum</i> King & Gamble (T166, T226)	+					
	<i>Palaquium oxleyanum</i> Pierre (T56, T424, T360, T490)	+					E
	<i>Palaquium stellatum</i> King & Gamble (T288, T334, T494)	+					
	<i>Payena lucida</i> A.DC. (T235)	+					
	<i>Pouteria malaccensis</i> (C.B.Clarke) Baehni (T91, T213)	+					
	<i>Eurycoma longifolia</i> Jack (T295)	+					
	<i>Heritiera elata</i> Ridl. (T422, T457)	+					
Simaroubaceae Sterculiaceae	<i>Heritiera javanica</i> (Blume) Kosterm. (T15)	+					
	<i>Heritiera simplicifolia</i> (Mast.) Kosterm. (T159, T191)	+					
	<i>Pterospermum javanicum</i> Jungh.						
	<i>Scaphium linearicarpum</i> (Mast.) Pierre (T58, T196)	+					
	<i>Scaphium macropodium</i> (Miq.) Beumée ex Heyne (T110)	+					
	<i>Sterculia rubiginosa</i> Vent. var. <i>rubiginosa</i> (T321)	+					
	<i>Symplocos adenophylla</i> Wall. ex G.Don (T476)						
	<i>Symplocos barringtoniifolia</i> Brand (T315)	+					
	<i>Symplocos</i> sp. 1 (T402)						
	<i>Adinandra sarosanthera</i> Miq. (T1)	+					
	<i>Gordonia singaporiana</i> Wall. ex Ridl. (T411)						
	<i>Ternstroemia maclellandiana</i> Ridl. (T459, T487)						
	<i>Aquilaria hirta</i> Ridl. (T116)	+					
	<i>Aquilaria malaccensis</i> Lam. (T300)						
Thymelaeaceae	<i>Gonystylus confusus</i> Airy Shaw (T90, T316, T491)	+					
	<i>Gonystylus maingayi</i> Hook.f. (T444, T463)	+					
		+					VU B1+2c LR/cd
							VU A1cd

Family	Species	1	2	3	4	E	Conservation status
Tiliaceae	<i>Microcos fibrocarpa</i> (Mast.) Burret (Chung & Angan RC 124)	+			+		
	<i>Microcos latifolia</i> Burret (T21, Chung & Angan Rc 125)	+		+			
	<i>Pentace strychnoidea</i> King (T181, T301)	+				E	LR/cd
Ulmaceae	<i>Schoutenia accrescens</i> (Mast.) C.H.Curtis ssp. <i>accrescens</i> (T59, Chung & Angan RC 126)	+			+		
	<i>Gironniera nervosa</i> Planch. (T281)		+				
	<i>Gironniera parvifolia</i> Planch. (T33, T195)	+	+	+	+		
	<i>Gironniera subaequalis</i> Planch. (T68)	+	+	+			
	<i>Trema angustifolia</i> (Planch.) Blume (T241)	+	+				
	<i>Trema orientalis</i> (L.) Blume (T242)		+				
	<i>Callicarpa maingayi</i> King & Gamble (T23)		+			E	
	<i>Clerodendrum deflexum</i> Wall. (T280)		+				
	<i>Peronema canescens</i> Jack (T184)		+				
	<i>Teijsmanniodendron coriaceum</i> (C.B.Clarke) Kosterm. (T232, T344)	+	+	+	+		
Violaceae	<i>Vitex gamosepala</i> Griff. (T31)	+					
	<i>Vitex pinnata</i> L. (Chung & Angan RC 144)				+		
Araceae	<i>Rinorea sclerocarpa</i> (Burgersd.) M.Jacobs (T38)	+					
	<i>Homalomena pontederifolia</i> Jungh. ex Schott (FRI 49086)	+				E	
	<i>Piptospatha cf. ridleyi</i> N.E. Br. (FRI 49081)		+				
	<i>Piptospatha perakensis</i> (Engl.) Engl. (FRI 49074)		+			E	
	<i>Schismatoglottis scortechinii</i> Hook.f. (FRI 49069)		+			E	
	<i>Scindapsus</i> sp. 1 (H 24)		+				
	<i>Scindapsus</i> sp. 2 (H 32)		+				
	<i>Amischotolype marginata</i> Hassk. (H 15)		+				
	<i>Amischotolype mollissima</i> Hassk. (FRI 49056)		+				
	<i>Peltosanthes teta</i> Andrews (FRI 49204)		+		+		
Costaceae	<i>Costus globosus</i> var. <i>kingii</i> Blume (FRI 49088)						
	<i>Costus spectosus</i> (J. König) Sm. (FRI 49804)						
Cyperaceae	<i>Cyperus iria</i> L. (FRI 49058)		+				E
	<i>Hypolytrum nemorum</i> var. <i>proliferum</i> (Vahl) Spreng. (FRI 49114)		+				
	<i>Mapania caudata</i> Kük. (H 5)	+	+	+	+		

Family	Species	1	2	3	4	E	Conservation status
Dracaenaceae	<i>Mapania cuspidata</i> var. <i>petiolata</i> (Miq.) Uittien (FRI 49097)				+		
	<i>Mapania kurzii</i> C.B. Clarke (FRI 49060)		+				
	<i>Scleria sumatrensis</i> Retz. (FRI 49082)	+					
	<i>Dracaena cantileyi</i> Baker (H 38)		+				
	<i>Dracaena conferta</i> Ridl. (H 27)		+				
	<i>Scrotochloa urceolata</i> (Roxb.) Judz. (H 33)		+				
	<i>Hanguanaya malayana</i> (Jack) Merr. (H 25)		+				
	<i>Molinera latifolia</i> var. <i>megacarpa</i> (Dryand.) Herb. ex Kurz (FRI 49098)	+					
	<i>Orchidantha fimbriata</i> Holttum (H 9)	+	+	+			
	<i>Donax grandis</i> (Miq.) K. Schum. (H 2)	+	+				
	<i>Stachyphrynium griffithii</i> (Baker) K.Schum. (FRI 49051)	+	+				E
	<i>Musa violascens</i> Ridl. (FRI 49059)		+				
	<i>Apostasia nuda</i> R.Br. (H39)	+					
	<i>Arundina graminifolia</i> (D. Don) Hochr.	+					
<i>Bromheadia finlaysoniana</i> (Lindl.) Miq. (H51)	+						
<i>Bulbophyllum hirtulum</i> Ridl.		+					
<i>Cladonia viridiflora</i> Hook.f. (H 31)		+					
<i>Corymborkis veratrifolia</i> (Reinw.) Blume (FRI 49083)		+					
<i>Dipodium pictum</i> (Lindl.) Rehb.f. (H 19)		+					
<i>Epigeneium longipes</i> ((Hook.f.) Summeth.			+				
<i>Flickingeria</i> sp. (H59)			+				
<i>Habenaria paradiseoides</i> (FRI 49202)					+		
<i>Liparis</i> sp.	+						
<i>Nephelaphyllum pulchrum</i> Blume (FRI 49203)					+		
<i>Neuwiedia</i> sp.		+					
<i>Tropidia graminea</i> Blume (H50)	+						
<i>Calamus castaneus</i> Griff. (FRI 46688)	+			+			
<i>Calamus densiflorus</i> Becc. (R14)	+					E	
<i>Calamus dtepenhorstii</i> Miq. (R1)	+	+					
<i>Calamus insignis</i> Griff. var. <i>insignis</i> (R21)	+	+	+	+	+	E	

Family	Species	1	2	3	4	E	Conservation status
	<i>Calamus laevigatus</i> Mart. (R5)	+	+	+			
	<i>Calamus longispatus</i> Ridl (FRI 46689)	+	+				
	<i>Calamus manan</i> Miq. (sighted)	+	+	+	+		
	<i>Calamus ornatus</i> Blume (sighted)	+					
	<i>Calamus rugosus</i> Becc. (R23)			+			
	<i>Calamus tanakadatei</i> Furtado (R20)			+			E
	<i>Calamus</i> sp.1 (R22)			+			
	<i>Calamus</i> sp.2 (R31)			+			
	<i>Caryota mitis</i> Lour. (P19)		+				
	<i>Ceratolobus kingianus</i> Becc. (FRI 46698)	+			+		E
	<i>Ceratolobus subangulatus</i> (Miq.) Becc. (R15)	+			+		
	<i>Daemonorops didymophylla</i> Becc. (FRI 46692)		+				
	<i>Daemonorops geniculata</i> (Griff.) Mart. (sighted)	+	+				
	<i>Daemonorops hystrix</i> (Griff.) Mart. var. <i>hystrix</i> (FRI 46685)	+	+	+			
	<i>Daemonorops kunsteri</i> Becc. (FRI 46695)	+	+				
	<i>Daemonorops micracantha</i> (Griff.) Becc. (FRI 46697)	+	+	+	+		
	<i>Daemonorops sabut</i> Becc. (R10)		+				
	<i>Daemonorops verticillaris</i> (Griff.) Mart. (sighted)	+			+		
	<i>Eugeissona brachystachys</i> Ridl. (FRI 46694)			+			
	<i>Eugeissona tristis</i> Griff.	+					E
	<i>Iguanura wallichiana</i> (Wall. ex Mart.) Hook.f. var. <i>wallichiana</i> (FRI 45225)	+	+	+	+		
	<i>Johannesteijsmannia altifrons</i> (Rchb.f. & Zoll.) H.E. Moore (P22)	+					
	<i>Korthalsia echinometra</i> Becc. (R9)	+	+	+	+		
	<i>Korthalsia laciniosa</i> (Griff.) Mart. (R18)	+	+				
	<i>Korthalsia rigida</i> Blume (sighted)						
	<i>Licuala glabra</i> Griff. var. <i>selangorensis</i> Becc. (FRI 45221)	+	+	+	+		
	<i>Licuala malajana</i> Becc. var. <i>malajana</i> (FRI 45222)	+	+				E
	<i>Licuala triphylla</i> Griff. (FRI 45224)	+					
	<i>Oncosperma horridum</i> (Griff.) Scheff. (P4)	+	+				
	<i>Pinanga disticha</i> (Roxb.) Blume ex H. Wendl. (FRI 45233)	+	+	+	+		

Family	Species	1	2	3	4	E	Conservation status
Pandanaaceae	<i>Pinanga limosa</i> Ridl. (P14)		+	+			
	<i>Pinanga malaiana</i> (Mart.) Scheff. (FRI 45229)	+	+	+	+		
	<i>Pinanga scortechinii</i> Becc. (FRI 45231)		+	+			
	<i>Pinanga simplicifrons</i> (Miq.) Becc. (P29)			+			
	<i>Plectocomiopsis corneri</i> Furtado (R35)				+		E
	<i>Pandanus calvus</i> B.C. Stone (H 43)	+					E
	<i>Pandanus monothecha</i> Martelli (FRI 49107)			+			
	<i>Pandanus pilaris</i> Ridl. (FRI 49065)		+				
	<i>Tacca integrifolia</i> Ker Gawl. (FRI 49072)		+	+	+		
	<i>Alpinia mutica</i> Roxb. (FRI 49827)		+				
	<i>Alpinia rafflesiana</i> Wall. ex Baker (FRI 49104, 49851)			+			
	<i>Alpinia scabra</i> (Blume) Baker (FRI 49828)			+			
	<i>Aromum uliginosum</i> J. König (FRI 49089)	+					
<i>Aromum</i> sp. (FRI 49106)			+				
<i>Camptandra parvula</i> (King ex Baker) Ridl. (FRI 49068, 49855)		+		+			
<i>Elettariopsis triloba</i> (Gagnep.) Loes. (FRI 49830, H14)		+		+			
<i>Etilingera coccinea</i> (Blume) S. Sakai & Nagamasu (FRI 49090)		+		+	+		
<i>Etilingera fulgens</i> (Ridl.) C.K. Lim (FRI 49087)		+		+	+		
<i>Etilingera maingayi</i> (Baker) R.M.Smith (FRI 49112)				+			
<i>Etilingera metriocheilos</i> (Griff.) R.M. Sm. (FRI 49109)			+	+			
<i>Globba cernua</i> Baker (FRI 49085)		+		+	+	E	
<i>Globba nawawii</i> H. Ibrahim & K. Larsen (FRI 49052, 49853, 49854)		+		+		E	
<i>Hornstedtia leonurus</i> (J. König) Retz. (FRI 49115)					+		
<i>Hornstedtia scyphifera</i> (J. König) Steud. (FRI 49105)				+			
<i>Scaphochlamys</i> sp. nov. (FRI 49057, 49856)							
<i>Scaphochlamys sylvestris</i> (Ridl.) Holttum (FRI 49091)		+				E	
<i>Zingiber petiolatum</i> (Holttum) I.Theilade (FRI 49061)	+						
<i>Zingiber spectabile</i> Griff. (FRI 49079)		+					